

Amendments to the Claims

1. (Currently Amended) A gas turbine engine combustor component comprising:  
a characteristic thermal-mechanical stress principal direction; and  
a single crystal substrate having a lowest modulus direction within 15° of said principal direction,

wherein the substrate comprises a nickel-based superalloy having, by weight percent:

1.0-12.0 Cr;

5.0-20.0 Co;

4.0-10.0 Ta;

5.3-6.5 Al; and

5.5-10.0 W; and

a gamma prime ( $\gamma'$ ) volume fraction in excess of 50%.

2. (Original) The component of claim 1 used as a gas turbine engine component selected from the group consisting of:  
combustor shell pieces; and  
combustor heat shield pieces.
3. (Original) The component of claim 1 having an overall shape of a frustoconical shell segment.
4. (Original) A gas turbine engine including a plurality of components according to claim 3 used as combustor heat shield pieces.
5. (Original) The component of claim 1 further comprising  
at least a partial coating on the substrate.
6. (Original) The component of claim 1 wherein:  
said crystalline structure is face-centered cubic.

7. (Original) The component of claim 1 wherein:  
said crystalline structure consists essentially of a nickel-based superalloy.

8. (Currently amended) The component of claim 1 wherein said nickel-based superalloy  
has, by weight percent:

1.0-12.0 Cr;

5.0-20.0 Co;

0.0-1.0 Ti;

4.0-10.0 Ta;

0-0.1 Y;

0.5-2.5 Mo;

0.0-7.0 Re;

0.0-5.0 Ru;

0.0-0.5 Hf;

5.3-6.5 Al; and

5.5-10.0 W;

balance nickel and impurities; and

a gamma prime ( $\gamma'$ ) volume fraction in excess of 50%.

9. (Currently amended) A combustor panel characterized by:  
a substrate having an overall shape of a frustoconical segment; and  
a single crystal grain structure of the substrate having a lowest modulus first direction  
within 30° of:

a central characteristic circumferential direction if a cone half angle of the panel  
has a magnitude less than 45°; or

a central characteristic conewise direction if the cone half angle of the panel has a  
magnitude greater than 45°.

wherein the substrate comprises a nickel-based superalloy having, by weight percent:

1.0-12.0 Cr;

5.0-20.0 Co;

4.0-10.0 Ta;

5.3-6.5 Al; and

5.5-10.0 W; and

a gamma prime ( $\gamma'$ ) volume fraction in excess of 50%.

10. (Original) The panel of claim 9 further characterized by:  
said lowest modulus first direction being within  $15^\circ$  of said central characteristic circumferential direction; and  
a lowest or second lowest modulus second direction within  $30^\circ$  of a central characteristic surface longitudinal direction.
11. (Original) The panel of claim 9 used in a gas turbine engine.
12. (Original) The panel of claim 9 further characterized by:  
the cone half angle being  $-30^\circ$  to  $30^\circ$ .
13. (Original) The panel of claim 9 further characterized by:  
the cone half angle being  $\pm(5^\circ$  to  $30^\circ)$ .
14. (Original) The panel of claim 9 further characterized by:  
the cone half angle having a magnitude in excess of  $60^\circ$ ; and  
the panel having a swirler aperture having a linear dimension of at least 25% of at least one of a local circumferential or local radial span.
15. (Previously presented) The panel of claim 9 wherein:  
the substrate consists essentially of a nickel-based superalloy.
16. (Original) The panel of claim 9 further characterized by:  
first and second edges essentially extending circumferentially; and  
third and fourth edges essentially extending in longitudinal/radial planes.
17. (Original) The panel of claim 9 further characterized by:

a characteristic circumferential span of 20° to 60°.

18. (Original) The panel of claim 9 further characterized by:  
a longitudinal span of 30mm to 200mm.

19-25. (Canceled)

26. (New) The component of claim 1 wherein said nickel-based superalloy has, by weight percent:

4.0-6.0 Cr;

9.0-11.0 Co;

0.0-1.0 Ti;

8.0-9.0 Ta;

0.001-0.1 Y;

1.5-2.5 Mo;

2.5-3.5 Re;

0.0-5.0 Ru;

0.05-0.45 Hf;

5.3-6.0 Al; and

5.5-6.5 W;

balance nickel and impurities; and

a gamma prime ( $\gamma'$ ) volume fraction in excess of 55%.